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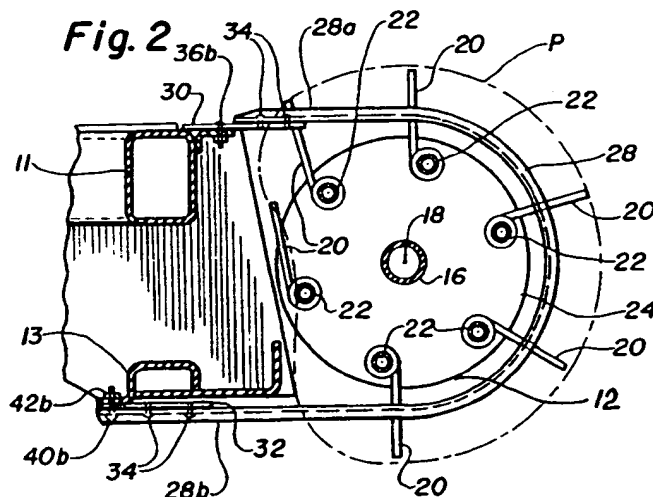
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B-8210 Zedelgem(BE)(54) **Pickup tine guard mounting arrangement**

(57) An arrangement for mounting tine guards (28) on a pickup (10) of an agricultural machine, such as a baler or a forage harvester, comprises upper and lower mounting plates (30, 32) which are removably attached to upper and lower frame members (11, 13), respectively, on the pickup (10). The pickup (10) includes a reel (12) having a plurality of tines (20) which project, as the reel (12) rotates, through spaces or gaps (26) formed between the tine guards

(28). The upper ends (28a) of the tine guards (28) are secured to the upper mounting plate (30) while the lower ends (28b) of the tine guards (28) are secured to the lower mounting plate (32) so that the tine guards (28) are removed together with the mounting plates (30, 32) when the mounting plates (30, 32) are detached from the pickup frame members (11, 13).

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mounting plates 30, 32 in groups of seven, it will be understood that the number of tine guards 28 secured to the mounting plates 30, 32 may be increased or decreased as desired. It will also be understood that each tine guard 28 is individually releasably fastened to the mounting plates 30, 32 so that, when necessary such as when damaged, each tine guard 28 may be separated individually from the mounting plates 30, 32 for replacement by a new tine guard 28.

The upper mounting plate 30 is removably attached to an upper frame member 11 of the pickup 10 above and rearwardly of the central shaft 16 by a first set of fasteners or bolts 36a, 36b which extend downwardly through holes 31a, 31b in the plate 30 and are threaded into nuts 38a, 38b. Bolt 36a is located adjacent one end of the upper mounting plate 30, and bolt 36b is located adjacent the other end of the upper mounting plate 30. The lower mounting plate 32 is removably attached to a lower frame member 13 of the pickup 10 below and rearwardly of the central shaft 16 by a second set of fasteners or bolts 40a, 40b, 40c which extend upwardly through holes 33a, 33b, 33c in the plate 32 and are threaded into nuts 42a, 42b, 42c. Bolt 40a is located adjacent one end of the lower mounting plate 32, bolt 40b is located adjacent the other end of the lower mounting plate 32, and bolt 40c is located intermediate the ends of the lower mounting plate 32.

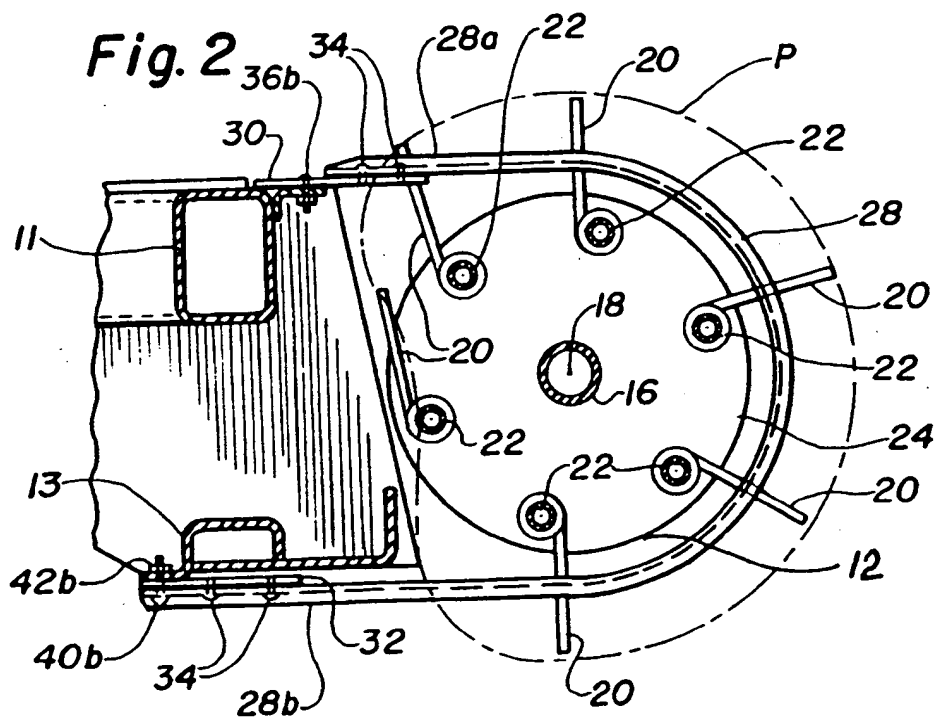
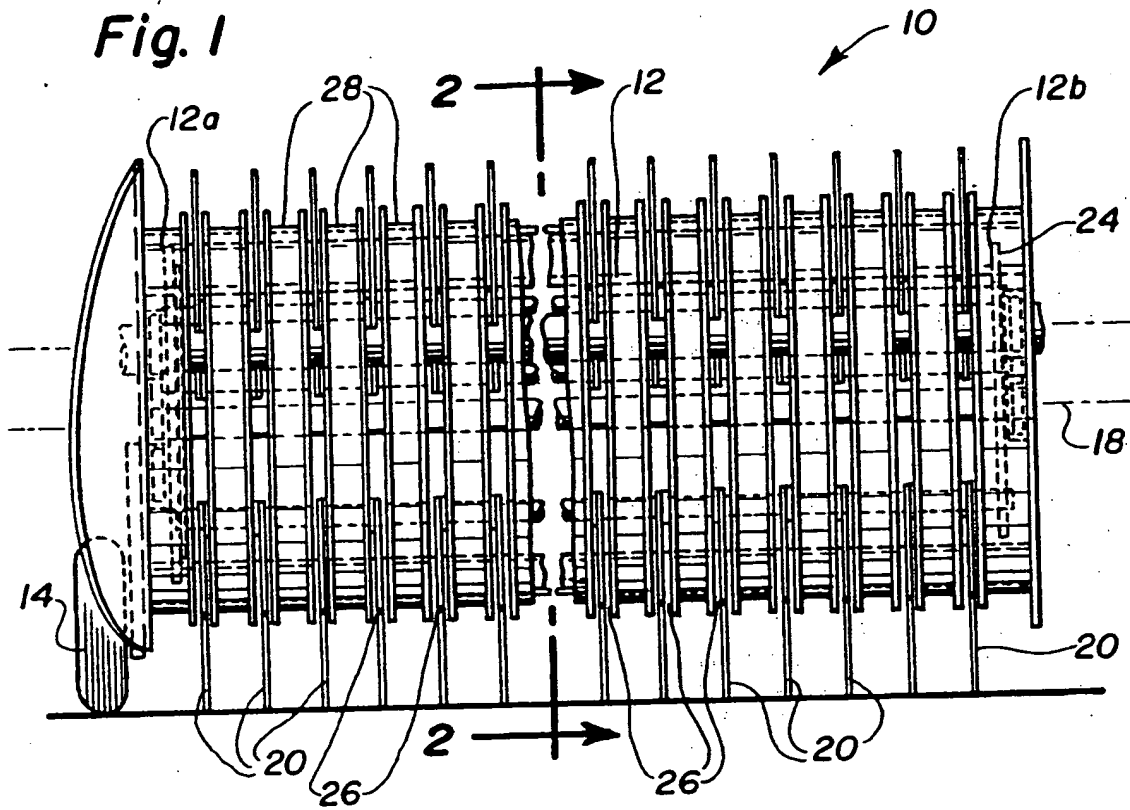
Therefore, it will be understood that the tine guards 28 are removed together with the upper and lower mounting plates 30, 32 when the mounting plates 30, 32 are detached from the frame members 11, 13. In other words, the upper and lower mounting plates 30, 32 together with the tine guards 28 attached thereto actually form a tine guard sub-assembly which readily can be detached from the pickup 10 as a unitary structure so as thereby to reduce the amount of time which is required for e.g. servicing the pickup reel 12.

In the preferred embodiment of the present invention, a total of seven tine guards may be removed by removing only five bolts, whereas in prior arrangements such as disclosed in the aforementioned US-A-3,397,527, the removal of seven tine guards would require the removal of twenty-eight bolts. This is an important advantage of the present invention because it significantly reduces the amount of time required for removing and replacing tine guards.

It will be understood that, since the pickup 10 shown in Figs. 1 and 2 has more than seven tine guards, more than one of the tine guard mounting arrangements shown in Fig. 3 would be used. For example, if pickup 10 has fourteen tine guards, two of the mounting arrangements would be required.

Claims

1. A pickup (10) for an agricultural machine; said pickup (10) including, on the one hand, a reel (12) having a plurality of tines (20) which are movable in a predetermined path (P) to lift crop material from the ground and, on the other hand, a plurality of tine guards (28) which are arranged side-by-side transversely of the pickup (10) to define spaces or gaps (26) therebetween through which the tines (20) project during movement in said path (P), and said pickup (10) being characterized in that:
 - upper and lower mounting members (30, 32), supporting a plurality of tine guards (28), removably are attached to first and second frame means (11, 13) on the pickup (10); the arrangement being such that this plurality of tine guards (28) together with the upper and lower mounting members (30, 32) form a tine guard sub-assembly which is removable from the pickup (10) as a unitary structure, and
 - each tine guard (28) is releasably fastened to the upper and lower mounting members (30, 32) so as to be individually separable from the tine guard sub-assembly.
2. A pickup (10) according to claim 1, characterized in that the tine guards (28) each have an upper end (28a) secured to the upper mounting member (30) and a lower end (28b) secured to the lower mounting member (32).
3. A pickup (10) according to claim 2, characterized in that the tine guards (28) each are releasably fastened to the upper and lower mounting members (30, 32) by bolts or rivets (34).
4. A pickup (10) according to any of the preceding claims, characterized in that the tine guards (28) are substantially C-shaped in side elevation.
5. A pickup (10) according to any of the preceding claims, characterized in that it further also comprises:
 - a first set of fastening means (36, 38) for removably attaching the upper mounting member (30) to the first frame means (11); and
 - a second set of fastening means (40, 42) for removably attaching the lower mounting member (32) to the second frame means (13).
6. A pickup (10) according to claim 5, character-





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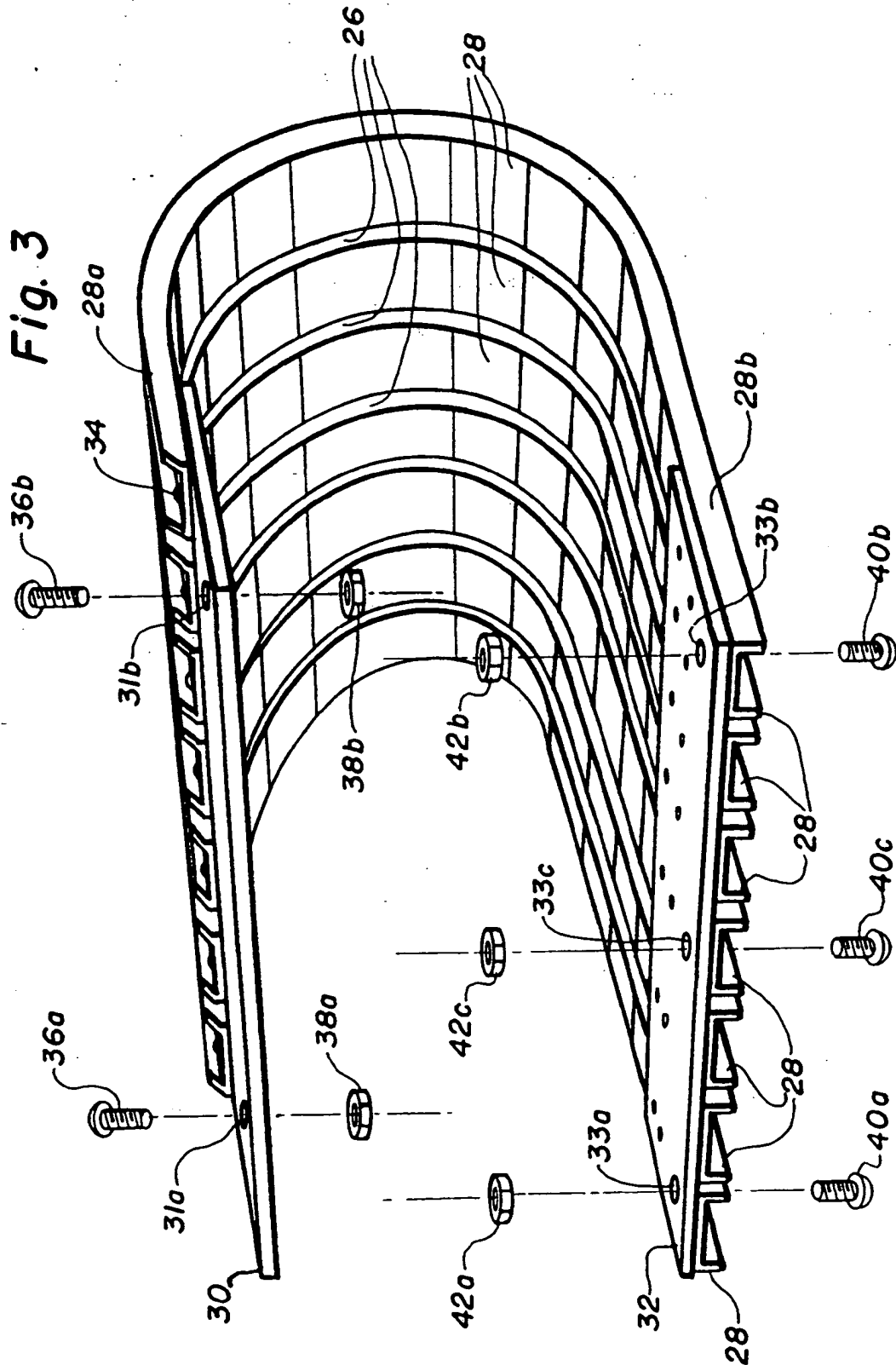
EUROPEAN SEARCH REPORT

Application Number

EP 91 20 2050

| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
|---|--|--|---|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int. Cl.5) |
| A | US-A-3 713 283 (FRITZ) * column 2, lines 20 - 64; figure 2 * | 1-4 | A 01 D 89/00 |
| A | US-A-4 161 859 (STORM ET AL.) * column 3, lines 11 - 33; figures 2, 3 * | 1,4 | |
| A | DE-A-3 315 033 (HERMANN LOHMANN MASCHINEN-FABRIK WESTKIRSCHEN) * page 13, last paragraph - page 15, paragraph 1; figure 2 * | 1-4 | |
| A | US-A-3 613 345 (COFER) * column 2, lines 27 - 54; figure 2 * | 1-4 | |
| A | US-A-3 226 921 (SHEPLEY) * column 2, line 29 - column 3, line 6; figures 2-4 * | 1-4 | |
| A,D | US-A-3 397 527 (LUEK ET AL.) | | |
| | | | TECHNICAL FIELDS SEARCHED (Int. Cl.5) |
| | | | A 01 D |
| The present search report has been drawn up for all claims | | | |
| Place of search Berlin | | Date of completion of search 14 November 91 | Examiner MERCKX A M |
| <div>CATEGORY OF CITED DOCUMENTS</div> <div><div>X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: Intermediate document T: theory or principle underlying the invention</div><div>E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document</div></div> | | | |

Fig. 3



ized in that the first set of fastening means (36, 38) comprises a fastener (36a, 38a) located adjacent one end of the upper mounting member (30), and another fastener (36b, 38b) located adjacent the other end of said upper mounting member (30). 5

7. A pickup (10) according to claim 5 or 6, characterized in that the second set of fastening means (40, 42) comprises a fastener (40a, 42a) located adjacent one end of the lower mounting member (32), another fastener (40b, 42b) located adjacent the other end of this lower mounting member (32), and a further fastener (40c, 42c) located intermediate the ends of said lower mounting member (32). 10 15
8. A pickup (10) according to claim 6, characterized in that the first set of fastening means (36, 38) comprises two bolts (36a, 36b) extendable downwardly through holes (31a, 31b) formed in the upper mounting member (30). 20
9. A pickup (10) according to claim 7, characterized in that the second set of fastening means (40, 42) comprises three bolts (40a, 40b, 40c) extendable upwardly through holes (33a, 33b, 33c) formed in the lower mounting member (32). 25 30

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This invention relates generally to pickups for agricultural machines and, in particular, to an arrangement for mounting pickup tine guards.

Pickups used on agricultural machines such as balers and forage harvesters typically include a reel which is rotatable about a horizontal axis. The reel has a plurality of tines mounted on bars for movement in a generally circular path to lift crop material from the ground. The tine bars are connected to a central shaft by end plates, and as the reel rotates, the tines project through spaces or gaps formed between tine guards arranged side-by-side transversely of the reel. These tine guards are individually secured by bolts at their top and bottom ends to support members on the pickup.

When service work on a pickup is necessary, one or more tine guards are removed in order to gain access to the reel. This is a time consuming job on conventional pickups because, in most situations, several (i.e. five to ten) tine guards must be removed to provide enough space to perform the service work. For example, if seven tine guards are removed from the pickup shown in the above-mentioned US-A-3,397,527, the removal of twenty-eight bolts or rivets is also required.

It is the objective of the present invention to eliminate the aforementioned disadvantage and to provide a mounting arrangement which permits a significant reduction of the amount of time required for removing and replacing tine guards of a pickup and thus also of the amount of time required for servicing e.g. the reel of this pickup.

According to the present invention, a pickup for an agricultural machine is provided; said pickup including, on the one hand, a reel having a plurality of tines which are movable in a predetermined path to lift crop material from the ground and, on the other hand, a plurality of tine guards which are arranged side-by-side transversely of the pickup to define spaces or gaps therebetween through which the tines project during movement in said path, and said pickup being characterized in that:

- upper and lower mounting members, supporting a plurality of tine guards, removably are attached to first and second frame means on the pickup; the arrangement being such that this plurality of tine guards together with the upper and lower mounting members form a tine guard sub-assembly which is removable from the pickup as a unitary structure, and
- each tine guard is releasably fastened to the upper and lower mounting members so as to be individually separable from the tine guard sub-assembly.

In the preferred embodiment of the invention, a first set of fastening means removably attaches the upper mounting member to the first frame means while a second set of fastening means removably attaches the lower mounting member to the second frame means. The first set of fastening means comprises a fastener located adjacent one end of the upper mounting member and another fastener located adjacent the other end of the upper mounting member. The second set of fastening means comprises a fastener located adjacent one end of the lower mounting member, another fastener located adjacent the other end of the lower mounting member and a further fastener located intermediate the ends of the lower mounting member. Also, the tine guards each are releasably fastened to the upper and lower mounting members by bolts or rivets.

A pickup in accordance with the present invention will now be described in greater detail, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a front elevational view of a pickup for agricultural machines, with a centre portion thereof broken away, incorporating a tine guard mounting arrangement according to the preferred embodiment of the present invention;

Fig. 2 is an enlarged sectional view taken along lines 2-2 in Fig. 1; and

Fig. 3 is a rear perspective view of a pickup tine guard mounting arrangement according to the preferred embodiment of the present invention.

Referring to Figs. 1 and 2, a pickup 10 for agricultural machines such as balers and forage harvesters, includes a reel 12 and is supported at one end by a wheel 14. The other end is supported by a frame (not shown) of a machine on which the pickup 10 is mounted. The reel 12 has a central shaft 16 with a horizontal axis 18, and a plurality of tines 20 are arranged in spaced apart rows along the length of the central shaft 16. The tines 20 are mounted on bars 22 which extend between plates 24 fixed to the shaft 16 adjacent the ends 12a and 12b of the reel 12. Conventional drive means such as chains and sprockets are provided to rotate the central shaft 16 and thereby cause movement of the tines 20 in a predetermined path P in order to lift crop material from the ground.

As the tines 20 move in the path P, they project through spaces or gaps 26 formed between a plurality of tine guards 28 which are arranged side-by-side transversely of the reel 12. The tine guards 28 are substantially C-shaped in side elevation and channel-shaped in cross section with their upper and lower ends 28a, 28b secured to upper and lower mounting plates 30, 32 by bolts or rivets 34. Although in the preferred embodiment shown in Fig. 3 the tine guards 28 are attached to the